

# Notice of Allowability

Application No.

10/664,717

Examiner

Hai L. Nguyen

Applicant(s)

BEHEL ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed on 6/30/2004.
2. ☒ The allowed claim(s) is/are 2-11 and 13-33.
3. ☒ The drawings filed on 16 September 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

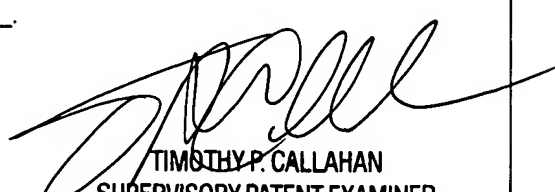
\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
TIMOTHY P. CALLAHAN  
SUPERVISORY PATENT EXAMINER

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendment received on 06/30/04 has been reviewed and considered with the following results:

As to the objections to the specification, Applicant's amendments of the specification have overcome the objections, as such; the objections to the specification have been withdrawn.

As to the rejections to the claims, under 35 U.S.C. 112, 1<sup>st</sup> & 2<sup>nd</sup> paragraphs, Applicant's amendments have overcome the rejections, as such; the rejections have been withdrawn.

As to the prior art rejections to the claims, the prior art rejections of the claims made in the previous Office Action are now withdrawn in view of the examiner's amendment. Therefore the case is found to be in allowance condition for the reasons as set for below.

## **REASON FOR ALLOWANCE**

2. The following is an examiner's statement of reasons for allowance:

The prior art of record does not disclose or suggest a variable-gain amplifier (as shown in Fig. 3) as recited in claims 2 and 3; comprising an attenuator (82) configured to receive the first input signal (38) and have a plurality of taps that provide successively-attenuated tap signals; a plurality of transconductance cells (84) that are each coupled to receive a respective one of the tap signals; and specifically the limitation directed to a multiplexer that, in response to at least a first segment (M) of a control word (41), routes a control current to enable at least a selected one of the transconductance cells and provide therefrom a current signal whose amplitude

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corresponds to the tap signal of the selected transconductance cell; and a gain interpolator (104) that, in response to a second segment (N) of the control word, provides the control current (I1, I2) to the multiplexer (32).

Claims 13 and 18 are allowed for similar reasons; note the above discussion with regard to claims 2 and 3.

The prior art of record does not disclose or suggest a variable-gain mixer (as shown in Figs. 3 and 6) that provides a mixer output signal (50) in response to first and second input signals (38, 48), as recited in claim 24; and specifically the limitation directed to a plurality of cascode transistors (162s) that are inserted to each couple a respective one of the transconductance cells (84s) to the transistor switch (90); a plurality of resistors (164) each coupled between a respective adjacent pair of the cascode transistors; and a current source (166) coupled to drive a bias current (168) through the resistors to thereby vary a bias signal of the trans conductance cells.

The prior art of record does not disclose or suggest a frequency converter (as shown in Fig. 7) whose gain corresponds to a control word (41), as recited in claim 25, comprising an oscillator (186); a variable-gain mixer (184 as 80 of Fig.3) that includes an attenuator (83s); a plurality of transconductance cells (84s); and specifically the limitation directed to a multiplexer (32) that receives a first segment (M) of the control word; a gain interpolator (104) that provides first and second control currents (I1 and I2) with amplitudes that correspond to a second segment (N) of the control word wherein, in response to the first control word segment, the multiplexer routes the first and second control currents to enable and adjust the gain of a selected adjacent pair of the transconductance cells and provide therefrom first and second current signals in

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response to the selected pair's respective tap signal; and a transistor switch (86) arranged to multiply the first and second current signals with the local oscillator signal to thereby provide a mixer output signal (50) with a gain that corresponds to the control word (41).

### *Conclusion*

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai L. Nguyen whose telephone number is 571-272-1747 and Right Fax number is 571-273-1747. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on 571-272-1740. The official fax phone number for the organization where this application or proceeding is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1562.

HLN   
August 6, 2004